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United States Department of Agriculture,
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GIFFORD PINCHOT, Forester.

FOREST PLANTING LEAFLET.

RED OAK (*Quercus rubra*).

FORM AND SIZE.

Red oak is one of the largest trees in the forests of the Northern States. The average height of mature trees is from 70 to 90 feet, and the diameter from 2 to 4 feet. Under the most favorable conditions a height of 150 feet, and a diameter of 5 feet, is attained. When grown free the tree has a broad and symmetrical crown and a short stem; in the forest it is tall and straight, with a small, narrow crown. On loose soil the base is often enlarged or buttressed.

RANGE.

The natural range of red oak is from Nova Scotia to west of Lake Superior and south to eastern Kansas and northern Georgia. It is very common and well developed in the Northern and Central States, where it usually is associated with other oaks, basswood, elms, chestnut, and hickories. Toward the extreme limits of its range it becomes rare and of small size.

Red oak is recommended for planting anywhere within the limits of its natural range, on soils of medium quality, and on those which have become exhausted by cultivation.

SILVICAL QUALITIES.

Red oak is best suited to porous sandy or gravelly clay soils. In this requirement it is intermediate between the white oaks and several of the black oak group. It requires well-drained soil always, but does not do well where the air is very dry.

The tree is intolerant of shade, except when very young, and must always be allowed to keep its crown free.

Red oak surpasses all other oaks in the rapidity of its growth, and is therefore a good tree to plant where conditions are suitable.

Like the other oaks, this species is not much subject to disease, nor to serious insect attacks, and is rarely overthrown by wind.

ECONOMIC USES.

The wood of red oak is heavy, hard, coarse-grained, strong, and moderately durable. It is inferior to white oak where great strength is required, and does not last so long in the ground, but it works more easily, and is often preferred for interior finish and for cabinet work. Good red oak is often sold as white oak, and for most purposes the two need not be distinguished. Ordinarily it is distinctly better than other species of the red oak group.

METHODS OF PROPAGATION.

Red oak reproduces freely both by acorns and by stump sprouts. The acorns require two years to reach maturity. They are quite bitter and are not relished by squirrels, and hence can be planted in the field with less risk than white oak acorns.

To secure vigorous sprouts, the trees should be felled between November and March; the stumps should be cut low and left smooth and slanting on top. Sprouts then start close to the ground, where they can soon develop root systems of their own and become self-supporting. The slanting stump causes the rain water to run off, and thus helps to prevent rapid decay.

Red oak develops a taproot, which in loose soil grows strong and penetrates to a considerable depth, but in shallow soil may be replaced by strong secondary roots.

PLANTING.

It is usually advisable to plant acorns in their permanent place in the field, for, like all oaks, the red oak is not easy to transplant when once fairly established, because of its stout taproot.

Where the area to be seeded can not be plowed, the acorns should be planted in holes about 4 feet apart each way, although the proper distance will depend upon local conditions. Two or three acorns should be placed in each hole and covered with about $1\frac{1}{2}$ inches of earth. If the planting is done on plowed land, the soil may be prepared as for any field crop.

Red oak can be grown in pure stands, but it will often do well with other oaks, sugar maple, white elm, chestnut, white pine, and hickories. With chestnut red oak needs to be given a start of two or three years, so that it will not be overtopped; but other oaks, elm, sugar maple, hickories, and white pine may be planted at the same time. Fast-growing trees, like locust, should not be planted with red oak, unless they are certain to be cut back whenever their branches interfere with the latter.

Plantations of red oak need very little care, except where the rainfall is so deficient that the soil must be cultivated to conserve the moisture. However, care should be taken to keep the little trees from being smothered by grass and weeds, and from being injured by stock and fire. Weeds and litter on the ground and shrubs that stand below the crowns of the trees are not ordinarily injurious and need not be removed.

Approved:

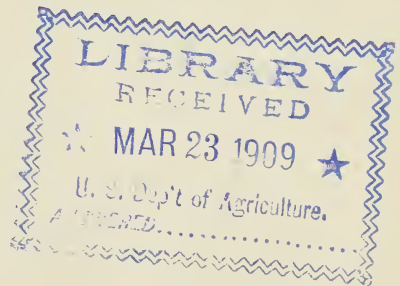
JAMES WILSON,

Secretary of Agriculture.

WASHINGTON, D. C., *March 1, 1909.*

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